



Technology Opportunity

Low-Cost, Long-Lasting Liquid Coating

The National Aeronautics and Space Administration (NASA) seeks to license its newest liquid-applied coating technology. Developed at the John F. Kennedy Space Center (KSC), Florida, to protect embedded steel surfaces from corrosion, this material is made of inexpensive, commercially available ingredients and is easily applied to the outer surface of reinforced concrete by brush or spray. Expensive, specialized labor is unnecessary.

By transferring the corrosion-prevention process from the inside of the formed concrete slab to the outside of the concrete surface, companies will be able to conveniently slow or stop the internal corrosion process. Without this preventive technology, embedded steel structures may continue to corrode and deteriorate until failure occurs, costing companies billions of dollars to repair these infrastructures.



Potential Commercial Uses

The KSC-developed coating may be used to prevent corrosion of steel in concrete in several applications, including:

- Highway and bridge infrastructures
- Piers and docks
- Concrete balconies and ceilings
- Parking garages
- Cooling towers
- Pipeline

Benefits

- The coating is applied to the outer surface of reinforced concrete, not directly to the rebar.
- Corrosion prevention is achieved after construction is complete.
- Application is performed quickly by brush or spray and can be repeated to provide extended protection.
- The low cost is achieved through relatively inexpensive labor and materials.
- The coating lasts 10 years or more, reducing maintenance costs over the lifetime of the structure.

Explore. Discover. Understand.

The Technology

NASA's highly reliable, low-cost liquid-applied coating offers companies the ability to conveniently protect embedded steel rebar surfaces from corrosion. The inorganic, galvanic coating contains one or more of the following metallic particles: magnesium, zinc, or indium. In addition, the coating may contain moisture-attracting compounds that facilitate the protection process. After the coating is applied to the outer surface of reinforced concrete, an electrical current is established between the metallic particles and the surfaces of the embedded steel rebar. This electrical (ionic) current is responsible for providing the necessary cathodic protection for the embedded rebar surfaces.

Coating performance has been characterized by KSC's Materials Science Laboratory and Beach Corrosion Test Site. Early tests determined that the coating met National Association of Corrosion Engineers (NACE) RP0290-90 100-millivolt (mV) polarization development/decay depolarization criteria for complete protection of steel rebar embedded in concrete. Other tests verified that the embedded rebar became negatively polarized, indicating the presence of a positive current flow with a shift in potential of over 400 mV. Accelerated life tests, tests with chlorides to simulate contamination, and compound optimization tests are currently being performed.

Options for Commercialization

NASA seeks qualified companies to commercialize the Low-Cost, Long-Lasting Liquid Coating. This and other technologies are made available by the KSC Technology Commercialization Office through a variety of licensing and partnering agreements. These include patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements.

Contact

If your company is interested in the Low-Cost, Long-Lasting Liquid Coating technology or if you desire additional information, please reference Case Number KSC-12049 and contact:

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Commercialization Checklist

- ✓ Patent Pending
 - U.S. Patent
 - Copyrighted
- ✓ Available to License
 - Available for no-cost transfer
 - Seeking industry partner for further codevelopment